In the Claims

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-83. (Cancelled)

84. (New) A method for producing end-derivatized single-wall carbon nanotubes comprising the steps of:

a) providing a plurality of single-wall carbon nanotubes; and

b) reacting the single-wall carbon nanotubes with a compound that provides at least one substituent on at at least one of the ends of at least a portion of the single-wall carbon nanotubes.

85. (New) The method of claim 84 wherein the at least one substituent is selected from the group consisting of alkyl; acyl; aryl; aralkyl; halogen; substituted thiol; unsubstituted thiol; substituted amino; unsubstituted amino; hydroxy; and OR', wherein R' is selected from the group consisting of alkyl, acyl, aryl, aralkyl, halogen, substituted thiol; unsubstituted thiol; substituted amino; unsubstituted amino, a linear carbon chain and a cyclic carbon chain and wherein the linear carbon chain, the cyclic carbon chain, or both are (a) optionally interrupted with one or more heteroatom and (b) optionally substituted with one or more =O, or =S, hydroxy, an aminoalkyl group, an amino acid, or a peptide of 2-8 amino acids.

86. (New) The method of claim 84 wherein the end-derivatized single-wall carbon nanotubes are soluble.

87. (New) A method for producing endohedrally-modified single-wall carbon nanotubes comprising:

a) forming single-wall carbon nanotubes; and

b) introducing endohedral species during the formation so that the single-wall carbon nanotubes are endohedrally-modified with the endohedral species.

88. (New) The method of claim 87 wherein the endohedral species is selected from the group consisting of fullerenes, C_{60}, C_{70}, metal atoms, molecules that do not bond to the single-wall carbon nanotubes, and combinations thereof.

89. (New) A method for producing endohedrally-modified single-wall carbon nanotubes comprising:

a) providing a plurality of single-wall carbon nanotubes that are open at at least one end; and

b) introducing at least an atom or molecule into the inside of the plurality of open single-wall carbon nanotubes.

90. (New) The method of claim 89 wherein the endohedral species is selected from the group consisting of fullerenes, C_{60}, C_{70}, metal atoms, molecules that do not bond to the single-wall carbon nanotubes, and combinations thereof.

91. (New) A method for producing end-derivatized single-wall carbon nanotubes comprising the steps of:

a) providing a plurality of single-wall carbon nanotubes, wherein the carbon nanotubes comprise at least about 100 carbon atoms; and

b) reacting the single-wall carbon nanotubes with a compound that provides at least one substituent on at at least one of the ends of at least a portion of the single-wall carbon nanotubes.

92. (New) The method of claim 91 wherein the at least one substituent is selected from the group consisting of alkyl; acyl; aryl; aralkyl; halogen; substituted thiol; unsubstituted thiol; substituted amino; unsubstituted amino; hydroxy; and OR', wherein R' is selected from the group consisting of alkyl, acyl, aryl, aralkyl, halogen, substituted thiol; unsubstituted thiol; substituted amino; unsubstituted amino, a linear carbon chain and a cyclic carbon chain and wherein the linear carbon chain, the cyclic carbon chain, or both are (a) optionally interrupted with one or more heteroatom and (b) optionally substituted with one or more =O, or =S, hydroxy, an aminoalkyl group, an amino acid, or a peptide of 2-8 amino acids.

93. (New) The method of claim 93 wherein the end-derivatized single-wall carbon nanotubes are soluble.